

Please add the following new claims.

52. (New) A surgical instrument for use in performing spinal surgery to prepare an implantation space across adjacent vertebrae, said surgical instrument for use with a computer controlled surgical navigation system employing a position tracking device to track positions of said surgical instrument in three-dimensional space relative to a known reference point, said surgical instrument comprising:

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a guide operable to provide access to adjacent vertebrae to prepare the implantation space, said guide defining a passage extending through said guide and adapted to receive a tool through said guide for use in forming the implantation space; and

a first tracking device attached to said guide for use in identifying a location of said guide relative to the adjacent vertebrae.

53. (New) The guide as defined in Claim 52 wherein said first tracking device is an active tracking device selected from a group consisting of acoustic, magnetic, electromagnetic, radiologic, light emitting devices and micropulsed radar systems.

54. (New) The surgical instrument as defined in Claim 52 wherein said first tracking device is a passive tracking device having reflective surfaces.

55. (New) The surgical instrument as defined in Claim 52 wherein said guide includes extensions extending from a first end operable to engage and penetrate the adjacent vertebrae.

56. (New) The surgical instrument as defined in Claim 52 wherein said guide includes spikes operable to engage and penetrate the adjacent vertebrae.

57. (New) The surgical instrument as defined in Claim 52 wherein said guide is operable to be impacted to engage and penetrate the adjacent vertebrae for use in preparing the implantation space.

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58. (New) The surgical instrument as defined in Claim 52 further comprising a tool operable to be inserted into said passage in said guide for use in performing the surgery, said tool including a second tracking device attached to said tool for use in identifying a position of said tool relative to said guide, wherein an orientation of said guide and a depth of said tool are determined upon tracking said first tracking device on said guide and said second tracking device on said tool.

59. (New) The surgical instrument as defined in Claim 52 wherein said tool is selected from a group consisting of a distractor, a tap, an inserter and a reamer.

60. (New) The surgical instrument as defined in Claim 52 wherein said guide having said first tracking device is used as a dynamic reference during the surgery.

61. (New) A surgical instrument for use in performing surgery to prepare an implantation space in at least one bone, said surgical instrument used with a computer controlled surgical navigation system employing a position tracking device to track positions of said surgical instrument in three dimensional space relative to a known reference point, said surgical instrument comprising:

a guide operable to engage the at least one bone for use in preparing the implantation space, said guide defining a passage extending through said guide for use in forming the implantation space, said guide including a first tracking device attached to said guide for use in identifying a position of said guide relative to the at least one bone; and

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Cont a tool operable to be inserted into said passage in said guide for use in performing the surgery, said tool including a second tracking device attached to said tool for use in identifying a position of said tool relative to said guide, wherein an orientation of said guide and a depth of said tool are determined upon tracking said first tracking device on said guide and said second tracking device on said tool.

62. (New) The surgical instrument as defined in Claim 61 wherein said first and second tracking devices are active tracking devices selected from a group consisting of acoustic, magnetic, electromagnetic, radiologic, light emitting devices and micropulsed radar systems.

63. (New) The surgical instrument as defined in Claim 61 wherein said first and second tracking devices are passive tracking devices having reflective surfaces.

64. (New) The surgical instrument as defined in Claim 61 wherein said guide includes extensions extending from a first end operable to engage and penetrate the at least one bone.

65. (New) The surgical instrument as defined in Claim 61 wherein said guide includes spikes operable to engage and penetrate the at least one bone.

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Cond 66. (New) The surgical instrument as defined in Claim 61 wherein said guide is operable to be impacted to engage and penetrate the at least one bone for use in preparing the implantation space.

67. (New) The surgical instrument as defined in Claim 61 wherein said guide is operable to engage a pair of adjacent vertebrae.

68. (New) The surgical instrument as defined in Claim 61 wherein said tool is selected from a group consisting of a distractor, a tap, an inserter and a reamer.

69. (New) The surgical instrument as defined in Claim 61 wherein said tool is an inserter operable to insert at least one of an implant and a bone dowel in the at least one bone and wherein said second tracking device is used for identifying a position of at least one of the implant and the bone dowel.

70. (New) The surgical instrument as defined in Claim 69 wherein at least one of the implant and the bone dowel may be inserted by at least one of pressing and threading at least one of the implant and the bone dowel into the at least one bone with said inserter.

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71. (New) The surgical instrument as defined in Claim 61 wherein said guide having said first tracking device is used as a dynamic reference during the surgery.

72. (New) A surgical instrument for use in performing surgery to insert at least one of an implant and a bone dowel into an implantation space in at least one bone, said surgical instrument used with a computer controlled surgical navigation system employing a position tracking device to track positions of said surgical instrument in three dimensional space relative to a known reference point, said surgical instrument comprising:

a guide operable to provide access to the implantation space, said guide defining a passage adapted to receive at least one of the implant and the bone dowel through said guide for insertion into the implantation space, said guide including a first

tracking device attached to said guide for use in identifying a position of said guide relative to the at least one bone; and

an inserter operable to be inserted into said passage in said guide for use in inserting at least one of the implant and the bone dowel into the implantation space, said inserter including a second tracking device attached to said inserter for use in identifying a position of said inserter relative to the at least one bone, wherein an orientation of said guide and a depth of said inserter are determined upon tracking the first tracking device on said guide and the second tracking device on said inserter.

73. (New) The surgical instrument as defined in Claim 72 wherein said first and second tracking devices are active tracking devices selected from a group consisting of acoustic, magnetic, electromagnetic, radiologic, light emitting devices and micropulsed radar systems.

74. (New) The surgical instrument as defined in Claim 72 wherein said first and second tracking devices are passive tracking devices having reflective surfaces.

75. (New) The surgical instrument as defined in Claim 72 wherein said guide includes extensions extending from a first end operable to engage and penetrate the at least one bone.

76. (New) The surgical instrument as defined in Claim 72 wherein said guide includes spikes operable to engage and penetrate the at least one bone.

77. (New) The surgical instrument as defined in Claim 72 wherein said guide is operable to be impacted to engage and penetrate the at least one bone for use in preparing the implantation space.

78. (New) The surgical instrument as defined in Claim 72 wherein said guide is operable to engage a pair of adjacent vertebrae.

79. (New) The surgical instrument as defined in Claim 78 wherein at least one of the implant and the bone dowel may be inserted by at least one of pressing and threading at least one of the implant and the bone dowel into the at least one bone with said inserter.

80. (New) The surgical instrument as defined in Claim 72 wherein said guide having said first tracking device is used as a dynamic reference during the surgery.

81. (New) A system for use in performing surgery to prepare an implantation space in at least one bone, said system comprising:

a guide operable to engage the at least one bone for use in preparing the implantation space, said guide defining a passage extending through said guide for use in forming the implantation space, said guide including a first tracking device attached to said guide for use in identifying a position of said guide relative to the at least one bone;

a tool operable to be inserted into said passage in said guide for use in performing the surgery, said tool including a second tracking device attached to said tool for use in identifying a position of said tool relative to said guide; and

a computer controlled surgical navigation system having a position tracking device operable to track positions of said guide and said tool relative to a known reference point, wherein an orientation of said guide and a depth of said tool are determined upon tracking said first tracking device on said guide and said second tracking device on said tool with said position tracking device.

82. (New) The system as defined in Claim 81 wherein said position tracking device is selected from a group of position tracking devices consisting of acoustic, magnetic, electromagnetic, radiologic, light emitting devices and micropulsed radar systems.

83. (New) The system as defined in Claim 81 wherein said guide is operable to be impacted to engage and penetrate the at least one bone.

84. (New) The system as defined in Claim 81 wherein said first and second tracking devices are active tracking devices selected from a group consisting of acoustic, magnetic, electromagnetic, radiologic, light emitting devices and micropulsed radar systems.

85. (New) The system as defined in Claim 81 wherein said first and second tracking devices are passive tracking devices having reflective surfaces.

86. (New) The system as defined in Claim 81 wherein said guide includes extensions extending from a first end operable to engage and penetrate the at least one bone.

87. (New) The system as defined in Claim 81 wherein said guide includes spikes operable to engage and penetrate the at least one bone.

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88. (New) The system as defined in Claim 81 wherein said tool is selected from a group consisting of a distractor, a tap, an inserter and a reamer.

89. (New) The system as defined in Claim 81 wherein said guide is operable to engage a pair of adjacent vertebrae.

90. (New) The system as defined in Claim 81 wherein said tool is an inserter operable to insert at least one of an implant and a bone dowel in the at least one bone and wherein said second tracking device is used for identifying a position of at least one of the implant and the bone dowel.

91. (New) The system as defined in Claim 90 wherein said computer controlled surgical navigation system displays a position of said inserter and displays at least one of the implant and the bone dowel on an end of said inserter based on a geometrical configuration of said inserter and of at least one of the implant and the bone dowel attached to said inserter being entered into said computer controlled surgical navigation system.

92. (New) The surgical instrument as defined in Claim 81 wherein said guide having said first tracking device is used as a dynamic reference during the surgery.

93. (New) A system for use in performing surgery to prepare an implantation space in at least one bone, said system comprising:

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a guide operable to provide access to prepare the implantation space in the at least one bone, said guide defining a passage adapted to receive a tool through said guide for forming the implantation space, said guide having a first tracking device attached thereto for use in identifying a position of said guide relative to the at least one bone;

an inserter sized for passage through said guide, said inserter having a second tracking device attached thereto for use in identifying a position of said inserter relative to the at least one bone, said inserter adapted to hold at least one of an implant and a bone dowel for insertion into the implantation space;

a computer controlled surgical navigation system employing a position tracking device to track positions of said guide and said inserter in three dimensional space relative to a known reference point; and

wherein said computer controlled surgical navigation system displays at least one of the implant and the bone dowel on an end of said inserter based on the geometrical configuration of said inserter and on at least one of the implant and the bone dowel attached to said inserter being entered into said computer controlled surgical navigation system.

94. (New) A method for performing surgery with a guide used to provide protected access into at least one bone to prepare an implantation space in the at least one bone, said method comprising:

contacting one end of said guide having a first tracking device attached thereto to the at least one bone;

employing a surgical navigation system with a computer controller and a position tracking device for communicating with said first tracking device attached to said guide;

positioning said guide in three dimensional space relative to a known reference point;

forming the implantation space through said guide into the at least one bone;

implanting at least one of an implant and a bone dowel into the implantation space;